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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent Application

Applicant(s): A.D. Baker et al.

Case: 19-3

Serial No.: 09/484,098

Filing Date: January 18, 2000

Group: 2157

Examiner: Gregory G. Todd

Title: Methods and Apparatus for Local Network
Address Acquisition, Analysis and Substitution

I hereby certify that this paper is being deposited on this date with the U.S. Postal Service as first class mail addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Signature:  Date: August 22, 2005TRANSMITTAL OF THIRD SUPPLEMENTAL APPEAL BRIEF

Mail Stop Appeal Brief - Patents
 Commissioner for Patents
 P.O. Box 1450
 Alexandria, VA 22313-1450

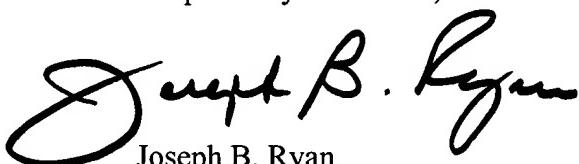
Sir:

Submitted herewith are the following documents relating to the above-identified patent application:

- (1) Response to Office Action; and
- (2) Third Supplemental Appeal Brief.

There is no additional fee due in conjunction with the response. In the event of non-payment or improper payment of a required fee, the Commissioner is authorized to charge or to credit **Avaya Inc. Deposit Account No. 50-1602** as required to correct the error.

Respectfully submitted,



Date: August 22, 2005

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Baker 19-3

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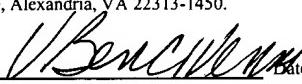
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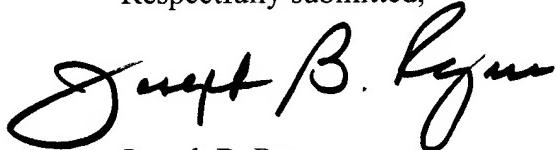
RESPONSE TO OFFICE ACTION

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In response to the Office Action dated May 20, 2005 in the above-referenced application, Applicants hereby request reinstatement of the appeal. A Third Supplemental Appeal Brief is submitted concurrently herewith.

Respectfully submitted,



Date: August 22, 2005

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Signature:  Date: August 22, 2005

Title: Methods and Apparatus for Local Network
Address Acquisition, Analysis and Substitution

THIRD SUPPLEMENTAL APPEAL BRIEF

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This Third Supplemental Appeal Brief is submitted in response to the Office Action dated May 20, 2005 in the above-referenced application, in which the Examiner reopened prosecution in response to the Second Supplemental Appeal Brief filed October 20, 2004.

Applicants would also like to point out that this is the fourth appeal brief filed in the present application. In response to each of the previous three appeal briefs, the Examiner has reopened prosecution. It is believed that the failure of the Examiner to permit the present application to proceed to the Board is resulting in an inefficient use of resources for both Applicants and the U.S. Patent and Trademark Office, as well as an inordinate delay in prosecution.

Applicants have submitted concurrently herewith a response to the Office Action, requesting reinstatement of the appeal.

REAL PARTY IN INTEREST

The present application is currently assigned to Avaya Inc. Avaya Inc. is the real party in interest.

RELATED APPEALS AND INTERFERENCES

There are no known related appeals or interferences.

STATUS OF CLAIMS

Claims 1-21 are pending in the present application. Each of claims 1-21 stands rejected under 35 U.S.C. §103(a). Claims 1-21 are appealed.

STATUS OF AMENDMENTS

There have been no amendments filed subsequent to the final rejection.

SUMMARY OF INVENTION

The present invention is directed to an apparatus, method and machine-readable storage medium for use in interfacing a local network to one or more external network elements.

An illustrative embodiment of the invention is shown in FIG. 1 of the drawings, and includes a local area network (LAN) 102 and a gateway 110. The LAN 102 is coupled to personal computers PC-1, PC-2, . . . PC-N, a printer 104 and a file server 106. The gateway 110 communicates via a DSL access multiplexer (DSLAM) 112 with external networks 114 and 116.

As indicated on page 4, lines 9-13 of the specification, a significant problem associated with a conventional gateway in a system such as that of FIG. 1 is that IP address disparity can arise between the personal computers, printer, file server or other devices attached to the LAN 102, such that direct communications between these devices are routed through one or more of the external networks 114 and 116. This is clearly undesirable in that it unnecessarily consumes network and gateway processing resources.

The present invention solves this significant problem of the prior art by implementing an address substitution mechanism in the gateway 110. Generally, the gateway is configured to determine remotely-assigned address information for a given device attached to the LAN, and to

establish, based at least in part on the remotely-assigned address information, a substitution address for use by at least one other device attached to the local network when communicating with the given device.

The address substitution mechanism in the illustrative embodiment is described as follows at page 4, lines 14-23 of the specification:

In accordance with the invention, gateway 110 is configured to intercept and store all address assignments issued by a remote network address server during an IP address assignment process, e.g. during a designated IP address exchange interval. The gateway 110 will then “trap” all incoming requests during, e.g., capabilities identification exchanges, and reissue the requests after evaluating and potentially adjusting the address fields thereof to a format suitable to each of the other devices on the LAN 102. Finally, at transport service time, the gateway 110 will receive individual message requests from devices on the LAN 102, map their addresses to appropriate substitution addresses, and reissue the messages with the altered addresses.

The address substitution mechanism implemented in the gateway 110 thus advantageously ensures that communications between devices attached to the local network are not routed through an external network as a result of disparity in their remotely-assigned IP addresses.

ISSUES PRESENTED FOR REVIEW

1. Whether claims 1-3, 5-13 and 15-21 are unpatentable under 35 U.S.C. §103(a) over U.S. Patent No. 6,563,824 (hereinafter “Bhatia”) in view of U.S. Patent No. 6,222,842 (hereinafter “Sasyan”).
2. Whether claims 4 and 14 are unpatentable under 35 U.S.C. §103(a) over Bhatia and Sasyan in view of U.S. Patent No. 6,493,348 (hereinafter “Gelman”).

GROUPING OF CLAIMS

With regard to Issue 1, claims 1-3, 5, 9, 11-13, 15, 19 and 21 stand or fall together, claims 6, 7, 16 and 17 stand or fall together, claims 8 and 18 stand or fall together, and claims 10 and 20 stand or fall together.

With regard to Issue 2, claims 4 and 14 stand or fall together.

ARGUMENT

Issue 1

A proper *prima facie* case of obviousness requires that the cited references when combined must “teach or suggest all the claim limitations,” and that there be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine the references or to modify the reference teachings. See Manual of Patent Examining Procedure (MPEP), Eighth Edition, August 2001, §706.02(j).

Applicants submit that the Examiner has failed to establish a proper *prima facie* case of obviousness in the §103(a) rejection over Bhatia and Sasyan, in that the Bhatia and Sasyan references, even if assumed to be combinable, fail to teach or suggest all the claim limitations, and in that no cogent motivation has been identified for combining the references or modifying the reference teachings to reach the claimed invention.

As indicated above, independent claim 1 calls for a gateway coupled between a local network and one or more external network elements, and operative to perform the following functions:

- (i) to determine remotely-assigned address information for a given device attached to the local network; and
- (ii) to establish, based at least in part on the remotely-assigned address information, a substitution address for use by at least one other device attached to the local network when communicating with the given device.

It is important to note that the substitution address, determined for the given device from the remotely-assigned address information for that device, is used by at least one other device attached to the local network when communicating with the given device. This has the advantageous effect of preventing communications directed between the given device and the other device from

traversing a remote network in a situation in which there are disparities in remotely-assigned address information between the two devices.

In the illustrative embodiment mentioned previously, the gateway is configured to intercept communications from devices on the local network in order to determine remotely-assigned IP address information for those devices. After such information is determined for a given device, the gateway creates a set of address substitution information that includes sub-network compatible addresses for use by other devices on the local network when communicating with the given device. The substitution addresses are then used in subsequent communications between the devices on the local network, thereby ensuring that communications between these devices are not routed through the external network.

The Examiner in formulating the §103(a) rejection relies primarily on the teachings in column 6, lines 9-60 of Bhatia. More specifically, the Examiner argues that the LAN modem 300 corresponds to the claimed gateway, and that it would be obvious in view of Sasyan to modify the LAN modem 300 in a manner which meets all of the limitations of claim 1. Applicants respectfully disagree, for the reasons identified below.

Applicants initially note that the Bhatia reference is directed to a different problem than the claimed invention, namely, the problem of maintaining remote accessibility to devices on a local area network, from different remote networks, in the presence of session changes. See Bhatia at, for example, column 1, lines 10-18, column 1, line 65, to column 2, lines 14-28. Thus, the routing arrangement implemented by Bhatia relates specifically to maintaining communication capabilities between a given device, on a local network, and one or more remote networks, in the presence of any session changes that may arise. Bhatia does not appear to be concerned with the particular problem addressed by the present invention, which, as indicated previously, is preventing communications between a given device on a local network and another device on that network from unnecessarily traversing a remote network.

The Examiner acknowledges that Bhatia fails to teach the claimed substitution address, which is established based at least in part on remotely-assigned address information for the given device attached to the local network, for use by at least one other device attached to the local network when communicating with the given device. See the Office Action at page 3, last paragraph.

The Examiner further argues that the Sasyan reference, in column 7, lines 26-56, teaches a substitution address of the type claimed. However, the relied-upon portion of Sasyan describes a testing arrangement in which processes 70 and 71 translate predetermined virtual addresses between machines M and T for the purpose of allowing communications between M and T to occur over multiple switched virtual circuits (SVCs). The stated benefit of such an arrangement is to make it possible “to test the ability of a machine M to concurrently operate a plurality of virtual circuits without needing to provide a respective destination machine for each SVC operated by machine M” (Sasyan, column 6, lines 28-36). Sasyan makes it clear that the processes 70 and 71 are implemented in one of the machines, such as machine T, or in a distributed manner using both of the machines. See Sasyan at column 65, lines 52-58.

Accordingly, it is believed that the Bhatia and Sasyan references, even if assumed to be combinable, fail to meet the limitations of independent claim 1 regarding a gateway which establishes a substitution address for use in communications between devices on a common local network. It is further apparent that such a combination fails to provide a solution to the particular problem addressed and solved by the present invention, namely, that of preventing communications between devices on a local network from traversing an external network.

Also, as indicated previously, the Examiner has failed to identify a cogent motivation for combining the references or modifying the reference teachings to reach the claimed invention. As indicated above, the virtual address translation used in Sasyan is particularly designed to overcome deficiencies associated with testing the ability of a machine to support multiple concurrent SVCs. There is no indication in Sasyan or Bhatia that such a testing arrangement would be useful or even workable in the LAN modem 300 as shown in FIG. 1 of Bhatia. Nonetheless, the Examiner states that it would be obvious to modify the LAN modem 300 of Bhatia to incorporate the address translation of Sasyan because it would “enhance” the Bhatia system. See the Office Action at page 4, first paragraph.

The Federal Circuit has stated that when patentability turns on the question of obviousness, the obviousness determination “must be based on objective evidence of record” and that “this precedent has been reinforced in myriad decisions, and cannot be dispensed with.” In re Sang-Su Lee, 277 F.3d 1338, 1343 (Fed. Cir. 2002). Moreover, the Federal Circuit has stated that “conclusory statements” by an examiner fail to adequately address the factual question of

motivation, which is material to patentability and cannot be resolved “on subjective belief and unknown authority.” *Id.* at 1343-1344. There has been no showing in the present § 103(a) rejection of objective evidence of record that would motivate one skilled in the art to combine Bhatia and Sasyan, or to modify the proposed combination of Bhatia and Sasyan, to produce the particular limitations in question. The statement of obviousness given by the Examiner in the Office Action is precisely the type of subjective, conclusory statement that the Federal Circuit has indicated provides insufficient support for an obviousness rejection. The combination of Bhatia and Sasyan thus appears to be based primarily upon a piecemeal reconstruction of the claimed invention given the benefit of the disclosure provided by Applicants, rather than upon any objective evidence of record.

Furthermore, Applicants submit that, even if one were to assume that a proper *prima facie* case has been established, one or more of the cited references actually teach away from the claimed invention, and thus refute the *prima facie* case. For example, Bhatia in column 5, lines 24-34, teaches that private IP addresses are assigned by the LAN 300 to workstations on the local network without regard to corresponding remotely-assigned public IP addresses. This is believed to be a direct teaching away from the claimed invention, in which a substitution address is established by a gateway based at least in part on remotely-assigned address information.

Independent claims 11 and 21 are believed allowable for substantially the same reasons identified above with regard to independent claim 1.

Dependent claims 2, 3, 5-10, 12, 13 and 15-20 are believed allowable for at least the reasons identified above with regard to their respective independent claims. Moreover, these dependent claims are believed to define additional separately-patentable subject matter relative to Bhatia and Sasyan, as described in greater detail below.

With regard to claims 6 and 16, each of these claims specifies that the gateway stores a set of address substitution information for each of the plurality of devices, with the set of address substitution information for a given one of the devices comprising an address to be used by the given device in communicating with the gateway and addresses to be used by the given device in communicating with each of the other devices. The Examiner in the Office Action at pages 4-5 argues that these limitations are met by the teachings in column 6, lines 9-28, column 11, lines 9-66, and column 12, lines 51-61, of Bhatia. However, these teachings relating to public and private IP

addresses fail to meet the specific language of the claim. More specifically, the cited portions of Bhatia do not disclose storing a set of address substitution information for each of a plurality of devices attached to a local network, with the address substitution information providing separate addresses for use by the given device in communicating with the gateway and with other devices attached to the same local network. Thus, it is believed that the combined teachings of Bhatia and Sasyan fail to meet the limitations in question.

With regard to claims 8 and 18, each of these claims specifies that a given one of the sets of address substitution information for a particular one of the plurality of devices comprises a set of IP addresses, each of which is sub-network compatible with an IP address remotely assigned to the corresponding device, such that communications between the given device and another one of the devices attached to the local network are not routed through an external network element. The Examiner relies on the teachings in column 5, lines 25-48, of Bhatia. However, as noted above, the address translation arrangements in Bhatia are not configured to avoid routing through external routing elements in the particular manner claimed, and in fact teach away from the claimed arrangements. Thus, it is believed that the combined teachings of Bhatia and Sasyan fail to meet the limitations in question.

With regard to claims 10 and 20, each of these claims specifies that the gateway intercepts at least one of control information and maintenance information received over the local network and associated with the given device so as to perform related services on behalf of the given device. The Examiner in the Office Action at page 6 argues that these limitations are met by the teachings in column 10, line 48, to column 11, line 7, and column 9, lines 22-55, of Bhatia. However, the cited portions fail to make any mention of interception of control information or maintenance information, or of the claimed performance of related services on behalf of a local device. Accordingly, it is believed that the combined teachings of Bhatia and Sasyan fail to meet the limitations in question.

Issue 2

As indicated above, a proper *prima facie* case of obviousness requires that the cited references when combined must “teach or suggest all the claim limitations,” and that there be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine the references or to modify the reference teachings.

Applicants submit that the Examiner has failed to establish a proper *prima facie* case of obviousness in the §103(a) rejection over Bhatia, Sasyan and Gelman, in that the Bhatia, Sasyan and Gelman references, even if assumed to be combinable, fail to teach or suggest all the claim limitations, and in that no cogent motivation has been identified for combining the references or modifying the reference teachings to reach the claimed invention.

As noted above, Bhatia and Sasyan collectively fail to teach the particular address substitution mechanism that is set forth in independent claims 1 and 11, from which respective claims 4 and 14 depend. Gelman fails to supplement this fundamental deficiency of the proposed combination of Bhatia and Sasyan. Accordingly, it is believed that the proposed combination of Bhatia, Sasyan and Gelman fails to meet the limitations of claims 4 and 14.

Moreover, the combined teachings of Bhatia, Sasyan and Gelman fail to disclose a gateway device comprising an ATU-R device with the particular functionality claimed. Although Gelman mentions the use of an ATU-R, it fails to specifically suggest the incorporation of the claimed address substitution functionality into an ATU-R device. It therefore appears that the Examiner in rejecting claims 4 and 14 has simply undertaken a hindsight-based reconstruction of the claimed invention, with the benefit of the disclosure provided by Applicants.

In view of the foregoing, Applicants believe that claims 1-21 are in condition for allowance, and respectfully request the withdrawal of the §103(a) rejections.

Respectfully submitted,



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Date: August 22, 2005

APPENDIX

1. An apparatus for use in interfacing a local network to one or more external network elements, the apparatus comprising:

a gateway coupled between the local network and the one or more external network elements, the gateway being operative to determine remotely-assigned address information for a given device attached to the local network; and to establish, based at least in part on the remotely-assigned address information, a substitution address for use by at least one other device attached to the local network when communicating with the given device.

2. The apparatus of claim 1 wherein the remotely-assigned address information comprises an Internet protocol (IP) address assigned to the given device by an external network element.

3. The apparatus of claim 1 wherein the local network comprises a local area network (LAN).

4. The apparatus of claim 1 wherein the gateway comprises an ADSL (asymmetric digital subscriber loop) termination unit-receive (ATU-R) device.

5. The apparatus of claim 1 wherein the gateway stores remotely-assigned address information for each of a plurality of devices attached to the local network.

6. The apparatus of claim 5 wherein the gateway stores a set of address substitution information for each of the plurality of devices, the set of address substitution information for a given one of the devices comprising an address to be used by the given device in communicating with the gateway, and addresses to be used by the given device in communicating with each of the other devices.

7. The apparatus of claim 6 wherein the stored information comprises an address substitution matrix having a row of address information for each of the plurality of devices attached to the local network.

8. The apparatus of claim 6 wherein a given one of the sets of address substitution information for a particular one of the plurality of devices comprises a set of IP addresses, each of which is sub-network compatible with an IP address remotely assigned to the corresponding device, such that communications between the given device and another one of the devices attached to the local network are not routed through an external network element.

9. The apparatus of claim 1 wherein the gateway processes a particular received packet in order to replace remotely-assigned address information in a header thereof with a corresponding substitution address determined by the gateway.

10. The apparatus of claim 1 wherein the gateway intercepts at least one of control information and maintenance information received over the local network and associated with the given device so as to perform related services on behalf of the given device.

11. A method for use in interfacing a local network to one or more external network elements, the method comprising the steps of:

determining, in a gateway coupled between the local network and the one or more external network elements, remotely-assigned address information for a given device attached to the local network; and

establishing a substitution address for use by at least one other device attached to the local network when communicating with the given device, based at least in part on the remotely-assigned address information.

12. The method of claim 11 wherein the remotely-assigned address information comprises an Internet protocol (IP) address assigned to the given device by an external network element.

13. The method of claim 11 wherein the local network comprises a local area network (LAN).

14. The method of claim 11 wherein the gateway comprises an ADSL (asymmetric digital subscriber loop) termination unit-receive (ATU-R) device.

15. The method of claim 11 wherein the gateway stores remotely-assigned address information for each of a plurality of devices attached to the local network.

16. The method of claim 15 wherein the gateway stores a set of address substitution information for each of the plurality of devices, the set of address substitution information for a given one of the devices comprising an address to be used by the given device in communicating with the gateway, and addresses to be used by the given device in communicating with each of the other devices.

17. The method of claim 16 wherein the stored information comprises an address substitution matrix having a row of address information for each of the plurality of devices attached to the local network.

18. The method of claim 16 wherein a given one of the sets of address substitution information for a particular one of the plurality of devices comprises a set of IP addresses, each of which is sub-network compatible with an IP address remotely assigned to the corresponding device, such that communications between the given device and another one of the devices attached to the local network are not routed through an external network element.

19. The method of claim 11 wherein the gateway processes a particular received packet in order to replace remotely-assigned address information in a header thereof with a corresponding substitution address determined by the gateway.

20. The method of claim 11 wherein the gateway intercepts at least one of control information and maintenance information received over the local network and associated with the given device so as to perform related services on behalf of the given device.

21. A machine-readable medium storing one or more programs for use in interfacing a local network to one or more external network elements, wherein the one or more programs when executed by a processor implement the steps of:

determining, in a gateway coupled between the local network and the one or more external network elements, remotely-assigned address information for a given device attached to the local network; and

establishing a substitution address for use by at least one other device attached to the local network when communicating with the given device, based at least in part on the remotely-assigned address information.